Operation/Reference Guide

Mio Modero® R-1

Remote Control Device

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Overview

The Mio Modero® R-1

The Mio Modero® R-1 (**FG147**) remote provides custom control features, contained in an elegant handheld device. The Mio R-1 controls 6 different device modes, supports 3 macro functions and is capable of executing 219 functions. Selecting a source device sends a command to the master and runs predetermined events associated with that source. Selecting a macro will run predefined events, which might not be associated with sources listed, then return the device to its previous mode.

You need KeypadBuilder to properly program this device. The application and documentation are available from **www.amx.com**.
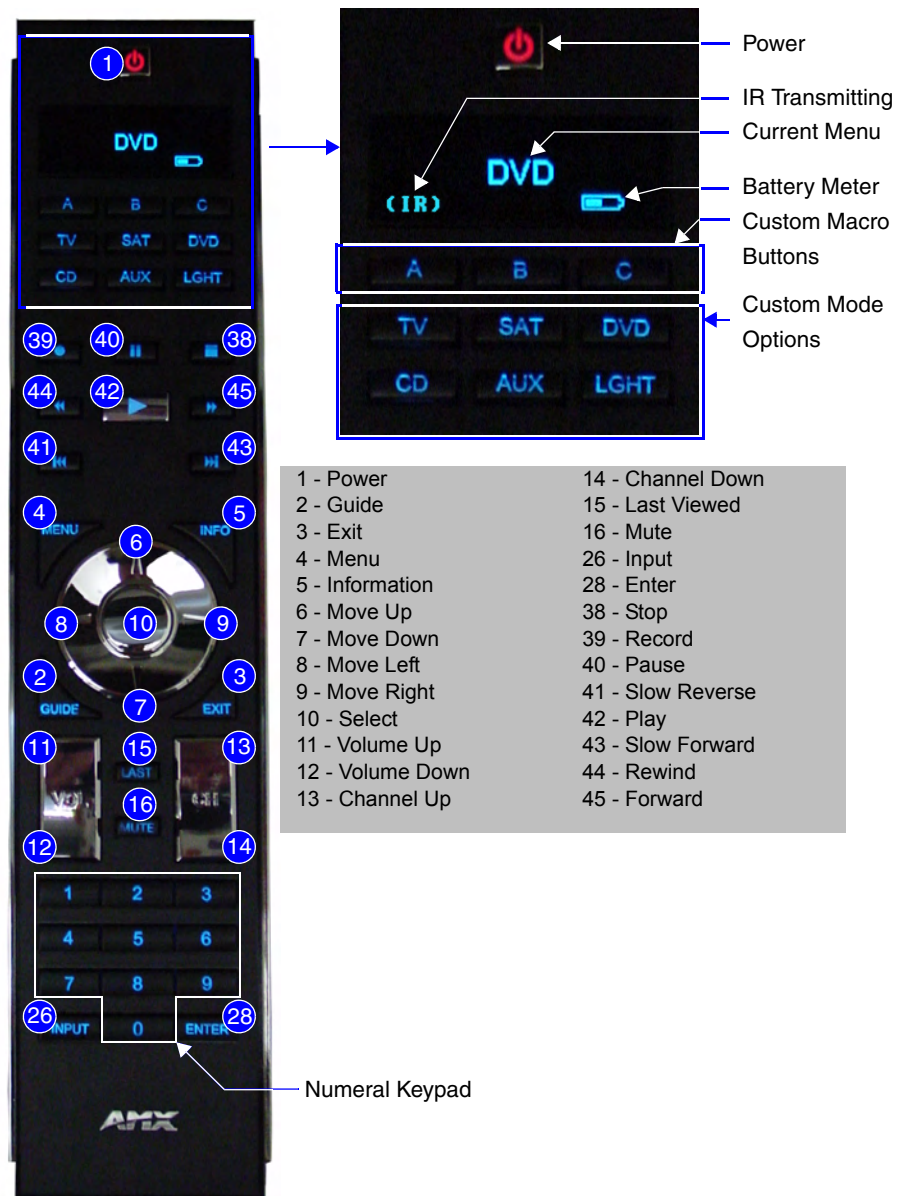

1 - Power	14 - Channel Down
2 - Guide	15 - Last Viewed
3 - Exit	16 - Mute
4 - Menu	26 - Input
5 - Information	28 - Enter
6 - Move Up	38 - Stop
7 - Move Down	39 - Record
8 - Move Left	40 - Pause
9 - Move Right	41 - Slow Reverse
10 - Select	42 - Play
11 - Volume Up	43 - Slow Forward
12 - Volume Down	44 - Rewind
13 - Channel Up	45 - Forward

FIG. 1 The Mio R-1 Device

Touch And Tilt Sensor

The Mio R-1 wakes up upon touching either the chrome side rails or pressing a button. You can reawaken the device by tilting it. The Mio R-1 is ready for input when you pick it up, but it can return to sleep in your hand. Errant jostling such as a bumped table will not wake the device unless you are holding it.

Specifications

The Mio R-1 device specifications are as follows:

Mio R-1 Specifications	
Battery	4 AAA Alkaline Batteries (5 hours battery life)
Transmission Frequencies	AMX 38 KHz/455 KHz IR
Transmission Range (distance) with Mio IR Receiver	• 100 feet at 38KHz • 50 feet at 455KHz
Transmission Range (angle)	• 140 degrees (+/-70° from perpendicular) horizontally from an axis extending from the end of the remote. • 40 degrees (+/-20° from perpendicular) vertically from an axis extending from the end of the remote.
Top Components	• LED - blue backlit buttons indicate device is awake • Display (OLED) - 128 x 32 pixels, active area is 29.42mm x 7.98mm • Pushbuttons - the power button is red backlit; the rest are blue backlit buttons. 45 buttons; 9 custom buttons (3 macro and 6 device).
Rear Component	• Programming Port - 2.5 mm stereo female conductor jack • Battery Door
Dimensions (HWD)	9.50 x 2.00 x .74 (241.3 mm x 50.8 mm x 18.80 mm)
Supported Languages:	• English • Korean • French • Mandarin Chinese • German • Portuguese • Greek • Russian • Italian • Spanish • Japanese
Weight	• .45 lbs (20 kg) without batteries • .55 lbs (25 kg) with batteries
Operating Environment:	• Operating Temperature: 0° to 50° C (32° to 122° F) • Storage Temperature: -10° to 70° C (14° to 158° F)
Included Accessories	• 4 AAA Alkaline Batteries
Other AMX Equipment:	• DB-9 extension cable (**FG10-727**) • Programming Cable - a 3 wire, 2.5 mm stereo jack (**FG10-817**) • Custom engraving (**FG147-01**) • Rechargeable Kit (**FG147-03**) • Rechargeable Lithium Ion Battery (**FG147-10**) • Mio Modero IR Receiver (**FG5797-01xx**; xx indicates color)

Mio R-1 Setup

Installing Your Custom Buttons

1. Flip and turn the Mio R-1 device so that the buttons are facing away from you and the device is upside down.

2. Holding the device in both hands, place your thumbs on the battery door and push up to slide the battery door free.

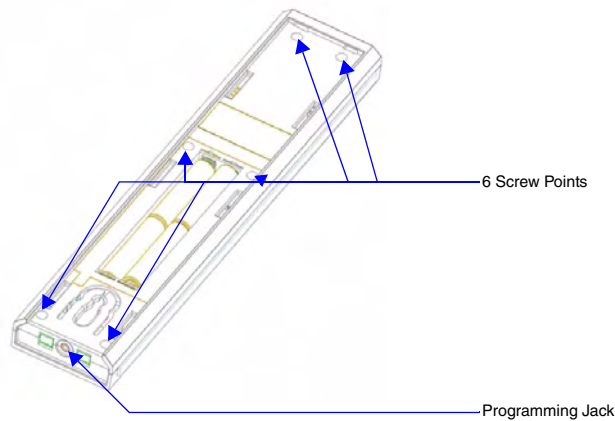3. Unscrew the 6 screw points indicated in FIG. 2.

6 Screw Points

Programming Jack

FIG. 2 Internal Mio R-1 Components

4. Turn the unit over so the buttons are facing you.

5. Lift the top assembly away from the PCB.

6. If necessary, push out the standard buttons from the front of the top assembly.

7. Drop on your custom button pad and verify the alignment with the guide posts on the PCB.

8. Place the top assembly back down on the PCB and return the unit over, exposing the 6 screw points.

9. Tighten the 6 screw points.

10. Place the battery door back on the device, slide to lock it in place.

Inserting Batteries into The Mio R-1

To install your 4 AAA batteries into the Mio R-1 device:

1. Flip and turn the Mio R-1 device so that the buttons are facing away from you and the device is upside down.

2. Holding the device in both hands, place your thumbs on the battery door and slide the battery door free. The battery door should slide toward the bottom end of the device.

3. Insert the batteries as indicated inside the battery compartment.

4. Place the battery door back on the device, and slide it to lock it in place.

Battery Low Indicator

When the battery charge level is too low to sustain continuous operation, the LCD flashes, "Battery Low" and the device shuts down.

Programming The Mio R-1

Most functionality of the Mio R-1 is handled using the application *KeypadBuilder.* Go to **www.amx.com** for the *KeypadBuilder Instruction Manual*.

The Mio R-1 recognizes a select number of Serial Commands. For a full list and descriptions, consult *Persistent Serial Commands* section on page 10.

Using Connector Ports on The Mio R-1

The programming jack is used for communication between the device and KeypadBuilder. The programming jack uses a three-wire, 2.5 mm stereo jack, you can order the programming cable (**FG10-817**) from AMX if you do not currently possess one. While loading your configuration file make sure the device is situated as such that the batteries will not fall out. The load will fail if your batteries fall out during the process. The Mio communicates at 115200 baud rate.

To download KeypadBuilder Configuration Files:

1. Set the Mio R-1 Download mode to ON. See the Configuration Mode section for details.

2. Flip and turn the Mio R-1 device so that the buttons are facing away from you and the device is upside down.

3. Holding the device in both hands, place your thumbs on the battery door and push up to slide the battery door free.

4. Connect the 2.5 mm stereo plug (male) end of the programming cable (**FG10-817**) into the programming jack on the bottom side of the remote device.

5. If necessary, connect the DB-9 end of the programming cable to the female DB-9 connector on the DB-9 extension cable (**FG10-727**).

6. Connect the female DB-9 terminal end of the extension cable to the port on the back of your computer.

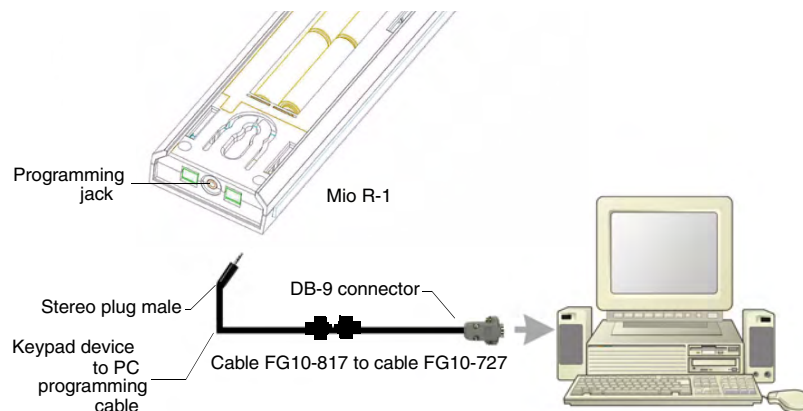7. Configure the communication parameters in KeypadBuilder.

FIG. 3 Connecting The Keypad Device to Your PC

IR Code Matrix

The IR Code emitted depends upon which of the 6 configurable modes is selected. Below is the list of codes for each button within each mode.

Button	Label	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6
1	Power Symbol	9	49	89	129	169	209
2	GUIDE	38	78	118	158	198	238
3	EXIT	37	77	117	157	197	237
4	MENU	31	71	111	151	191	231
5	INFO	39	79	119	159	199	239
6	▲	32	72	112	152	192	232
7	▼	33	73	113	153	193	233
8	◄	34	74	114	154	194	234
9	►	35	75	115	155	195	235
10	SELECT	36	76	116	156	196	236
11	VOL +	24	64	104	144	184	224
12	VOL -	25	65	105	145	185	225
13	CH +	22	62	102	142	182	222
14	CH -	23	63	103	143	183	223
15	LAST	40	80	120	160	200	240
16	MUTE	26	66	106	146	186	226
17	1	11	51	91	131	171	211
18	2	12	52	92	132	172	212
19	3	13	53	93	133	173	213
20	4	14	54	94	134	174	214
21	5	15	55	95	135	175	215
22	6	16	56	96	136	176	216
23	7	17	57	97	137	177	217
24	8	18	58	98	138	178	218
25	9	19	59	99	139	179	219
26	INPUT	29	69	109	149	189	229
27	0	10	50	90	130	170	210
28	ENTER	21	61	101	141	181	221
29	A (Macro 1)	250	250	250	250	250	250
30	B (Macro 2)	251	251	251	251	251	251
31	C (Macro 3)	252	252	252	252	252	252
32	TV (Mode 1)	241	241	241	241	241	241
33	SAT (Mode 2)	242	242	242	242	242	242
34	DVD (Mode 3)	243	243	243	243	243	243
35	CD (Mode 4)	244	244	244	244	244	244
36	AUX (Mode 5)	245	245	245	245	245	245
37	LGHT (Mode 6)	246	246	246	246	246	246
38	STOP ■	2	42	82	122	162	202
39	REC ●	8	48	88	128	168	208
40	PAUSE ❚❚	3	43	83	123	163	203

IR Code Matrix (Cont.)							
Button	Label	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6
41	S. REV ◄◄	7	47	87	127	167	207
42	PLAY ►	1	41	81	121	161	201
43	S. FWD ►►|	6	46	86	126	166	206
44	REW ◄◄	5	45	85	125	165	205
45	FWD ►►	4	44	84	124	164	204

Configuration Mode

The configuration mode allows you to set the following device features:

- IR Transmit Mode (38 KHz or 455 KHz)

- Timeout Adjustment

- Download Mode

- Debug Mode

- Battery Type

- LED Awake Brightness

- Sleep Brightness

To enter configuration Mode:

1. Press and hold the **STOP** button and the **INPUT** button. The two buttons must be pressed within 0.1 seconds of each other and held down for 2 seconds. The device indicates you are now in configuration mode. See below for available modes.

2. Press the **EXIT** key when you are finished.

Note: *Your settings will not be lost in the event your batteries die or are removed.*

IR Transmit Mode

Pressing button "1" on the remote toggles the IR transmission mode between 38Khz and 455Khz. The display indicates the current mode.

Timeout Adjustment

Press button "2" on the remote to change the sleep timeout from the default. Each time "2" is pressed, the sleep timeout raises incrementally. The pre-determined sleep timeouts are:

- 3 seconds

- 6 seconds

- 9 seconds

- 12 seconds

The display indicates the selected sleep timeout.

Download Mode

Pressing "3" on the remote toggles the Download mode OFF and ON. The Download mode must be ON before you can download a file to the Mio R-1 device. While the Download mode is ON the device will not go to sleep. A power cycle will return the device to Download OFF.

Debug Mode

Pressing button "4" on the remote toggles development mode between ON and OFF. The display indicates the selected mode. In development mode, the display shows the IR code assigned to buttons when pressed.

This mode is useful to the programmer when determining what IR codes are associated to each mode.

Battery Type

Pressing button "6" on the remote toggles the battery type between Normal and Recharge. The display indicates the selected type. The type of battery in the Mio R-1 dictates the battery type you need to set.

LED Awake Brightness

Pressing button "7" on the remote toggles the Power LED brightness mode from LOW to MED and then HIGH. The display indicates the selected mode.

Sleep Brightness

Pressing button "8" on the remote toggles the Sleep brightness mode from OFF to LOW and then MED. The Sleep brightness is the state the Mio R-1 assumes while in the charging cradle.

Setting The IR Frequency

The Mio R-1 is set to the IR frequency 38KHz by default. You need to utilize the IRMODE Serial Command to change the frequency to 455KHz. To set the frequency to 455KHz:

1. Establish a HyperTerminal session with your device.

2. Send "IRMODE 455" to the device.

3. Close the HyperTerminal session.

The command, "IRMODE 38" switches the device back to 38KHz.

Updating Mio R-1 Firmware

Updating firmware in the Mio R-1 is also done through the programming jack. To update the main firmware for the Mio R-1:

1. Connect the Mio R-1 to your computer via the programming jack (FIG. 3).

2. Put the device into *Download* mode, as shown on page 8.

3. Open NetLinx Studio.

4. Set the *Master Communication Settings* to *Axcess Master* and set the baud rate to 115200.

5. Go to **Tools > Firmware Transfers > Send to Axcess Device...** This opens the *Send to Axcess* Dialog Window(FIG. 4).
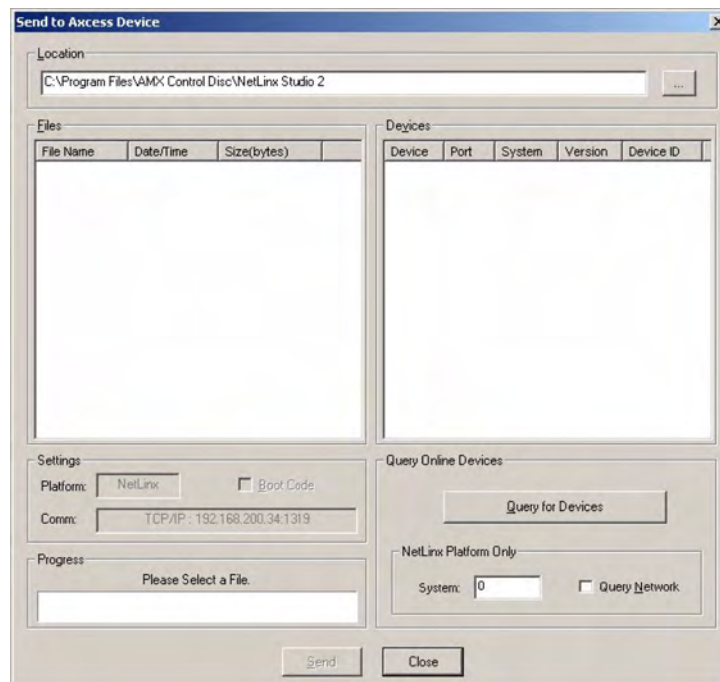
FIG. 4 Send to Axcess Dialog Window

6. Browse to the location of the firmware file.

7. Select the file within the *Files* frame.

8. Click **Query for Devices**.

9. The Query For Devices field will display a complete list of all devices currently connected to NetLinx Studio capable of accepting the firmware file selected. Select the Mio R-1.

In most cases, the Mio R-1 is the only device on the list.

NOTE

10. Click **Send**.

11. After device firmware download, check one more time to verify the firmware version change.

12. Click **Close**.

13. Upon confirmation of a successful send, you can exit NetLinx Studio and disconnect the programming jack.

Persistent Serial Commands

There are a select number of persistent commands the Mio R-1 recognizes. Establish a HyperTerminal session with your device to use the following commands:

Serial Commands	

@BRT	Set Brightness level
	
	Syntax:
	`"'BRIT-<awake brightness level>,<sleep brightness level>'"`
	
	Variables:
	brightness level # = a value from 0 - 32.
	`"'@BRT-#'"`　　　(Set LED Awake brightness level)
	`"'@BRT-#,#'"`　　　(Set LED Awake brightness level, sleep brightness level)
	Example:
	`(1) "'@BRT-16'"`
	Sets the awake brightness level to 50%.
	`(2) "'@BRT-32,5'"`
	Sets the awake brightness level to 100% and sleep brightness level to approximately 15%

IRMODE #	Sets the IR transmission frequency to either 455KHz or 38KHz.
	
	Syntax:
	`"IRMODE #"`
	
	Variables:
	# = 455 or 38
	Example:
	`"IRMODE 455"`
	Sets the IR transmission frequency to 455KHz.

SLEEP-#	Force the device into screen saver mode. **Syntax:** `"'SLEEP-#'"` (timed sleep; a persistent command) **Variables:** # = 0 - 60 in seconds; time to wait before going to sleep. Default is 30. 0 sets the device to never sleep. **Example:** `SEND_COMMAND Panel,"'SLEEP-45'"` Forces the device into screen saver mode after 45 seconds.

Mio Remote Charging Base

The Mio remotes are complemented either with a Mio-RCC charging base (**FG147-02)** or the Mio-RCC rechargeable upgrade kit (**FG147-03K)**. One charging base, a new back housing and a Mio-RBP rechargeable lithium ion battery (**FG147-10**) are included with the rechargeable upgrade kit. The charging base upgrade kit transforms the Mio R-1, R-2 and R-3 into a rechargeable device.

Begin with *Installing The Rechargeable Battery* for the Mio-RCC rechargeable upgrade kit (**FG147-03K**) or *Charging The Mio Remote with Charging Base* for the Mio-RCC charging base (**FG147-02**).
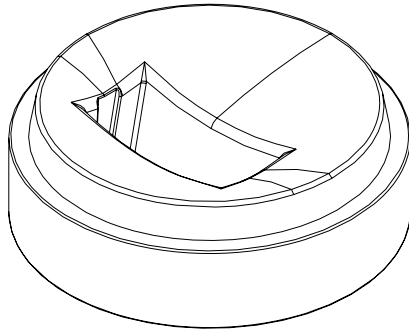

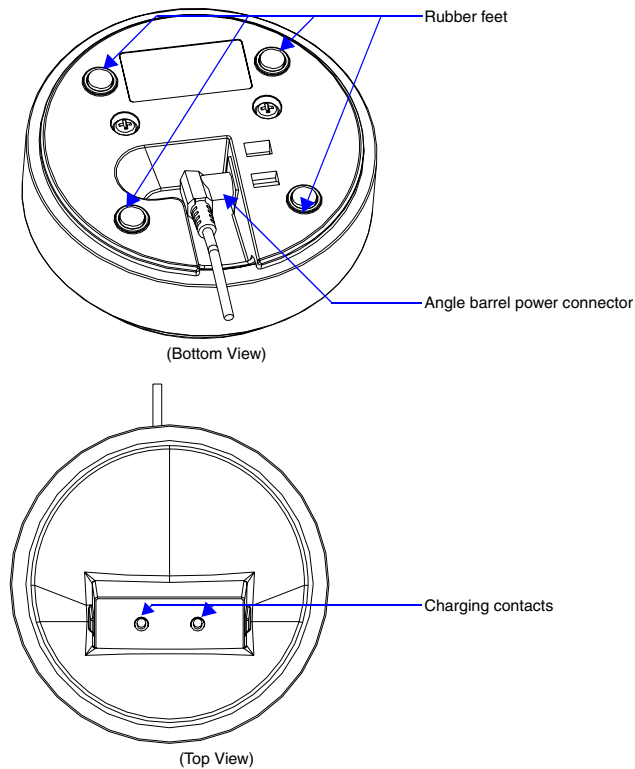**FIG. 5** Mio-RCC Charging Base

Specifications

FIG. 6 Mio Remote Charging Base (Top and Bottom view)

The specifications for the Mio remote charging base and kit are as follows:

Mio-RCC Remote Charging Kit (FG147-03K) with Base (FG147-02) Specifications	
Dimensions (HWD)	Charging Base - 1.61 (4.09 cm) (height); 4.25 (10.80 cm) (diameter)
	Lithium Ion Battery - 2.13" x 1.38" x .28" (5.41 cm x 3.45 cm x .71 cm)
Weight	• 1.15 lbs (.52 kg) - Remote Charging Cradle
	• .15 lbs (.07 kg) - Power Supply
	• .06 lbs (.027 kg) - Rechargeable Lithium Battery
Included Items:	• Rechargeable Lithium Ion battery (4 hours battery life) *Kit only*
	• Back housing *Kit only*
	• Mio-RCC Charging base (**FG147-02**) with Power Supply
	• Power supply *Kit only*
Other AMX Equipment:	• Mio-RCC Charging Base (**FG147-02**) with Power Supply
	• Mio R-1 (**FG147**)
	• Mio R-2 RF 418 (**FG147-418**)
	• Mio R-2 RF 433 (**FG147-433**)
	• Mio-RBP Rechargeable Lithium Ion Battery (**FG147-10**)
	• AXR-RF 418 MHZ RF Receiver (**FG782-418**)
	• AXR-RF 433 MHZ RF Receiver (**FG782-433**)
	• Mio Modero IR Receiver (**FG5797-01xx**; xx indicates color)

Installing The Rechargeable Battery

1. Flip and turn the Mio R-1 so that the buttons are facing away from you and the device is upside down.

2. Holding the device in both hands, place your thumbs on the battery door and push up to slide the battery door free.

3. If present, remove the AAA batteries.
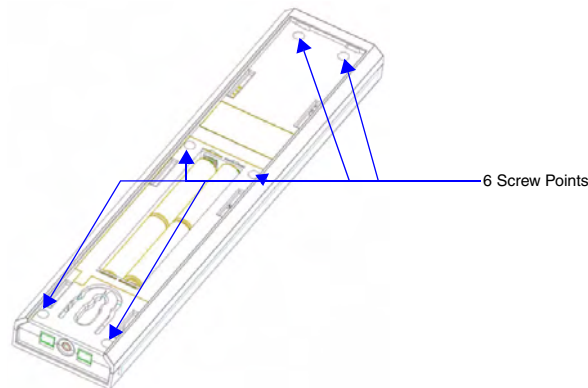
4. Remove the 6 screws shown in FIG. 7.

6 Screw Points

FIG. 7 6 Screw Points of The Back Housing

5. Remove the back housing.

6. Place the new housing on the device so that the rechargeable battery port connection is now accessible. See FIG. 8.

7. Replace the 6 screws.

8. Connect the terminal end of the Lithium-Ion battery to the port shown in FIG. 8. It may be necessary to use a thin, blunt object to fully seat the battery connector within its port.
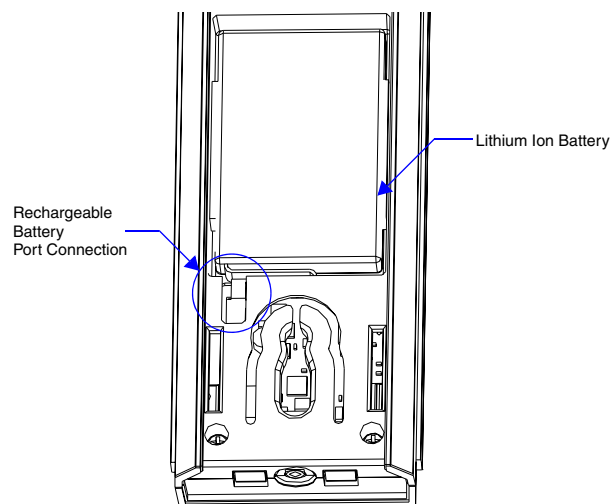

Lithium Ion Battery

Rechargeable
Battery
Port Connection

FIG. 8 Rechargeable Battery Port on The Mio Remote

9. Press the battery between the rubber pads, with sticker showing, in the housing area of the Mio remote. Confirm battery is flush with bottom of battery enclosure on bottom housing.

10. Replace the battery door and slide to lock it in place.

11. Begin charging the battery.

Charging The Mio Remote with Charging Base

The Mio remotes receive power for charging from a charging base.

1. Connect the terminal end of the power supply to the bottom external power port on the Mio remote charging base. See FIG. 6 for location.

2. Route the cable through the provided channel so that it comes out the side of the base.

3. Connect the power cord to an external power source.

4. Place the bottom of the Mio remote into the charging base so the contacts on the device are on top of the charging contacts inside the charging base. The Power LED on the Mio remote blinks red to indicate it is charging and illuminates solid red when it is done. Full charge cycle for a depleted battery is approximately 3 hours.

Avoid placing units equipped with AAA batteries in the charging base.

Changing Battery Modes

Configuration Mode

The *Configuration* mode allows you to set the battery type. To enter *Configuration* mode:

1. Press and hold the **STOP** button and the **INPUT** button simultaneously. The two buttons must be pressed within 0.1 seconds of each other and held down for 2 seconds. The device indicates you are now in *Configuration* mode.

Battery Type

2. Pressing button **6** on the remote toggles the battery type between *Normal* and *Recharge*. The display indicates the selected type. The type of battery in the Mio R-1 dictates the battery type you need to set.

3. Press the **EXIT** key when you are finished.

Your settings will not be lost in the event your batteries die or are removed.

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